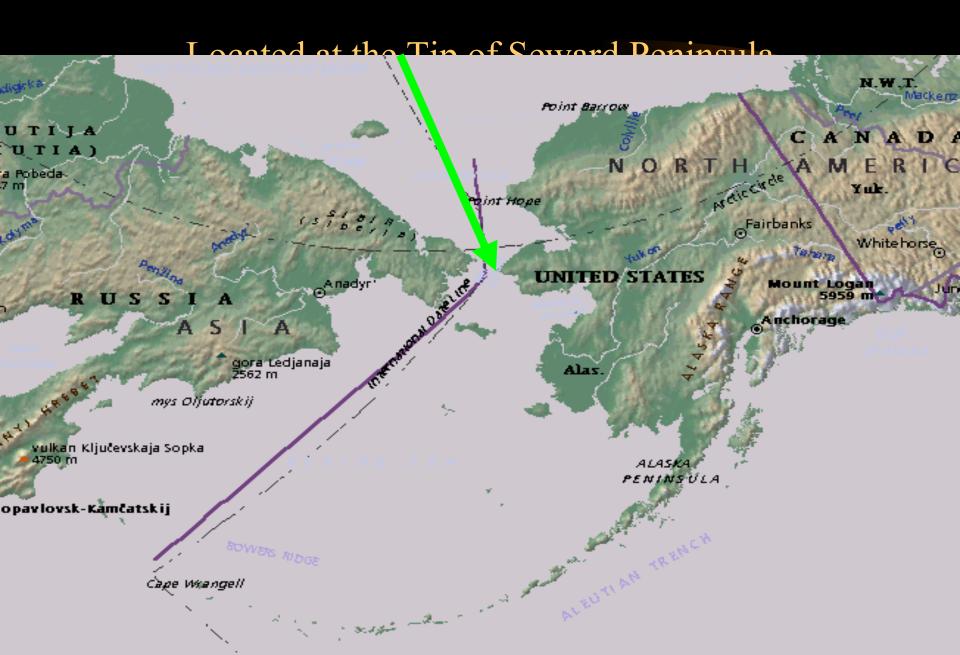
# Wales Operational Experiences

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General Manager
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Wind/Diesel 2004
Girdwood

#### Wales Alaska



# Weather Issues - Wales



#### Turbines Installed - Wales



# Shipping - Wales



#### On Site Construction - Wales



#### Turbine Erection - Wales



## Gin Pole - Wales



#### Wind Turbine Control Building - Wales



## Wales Alaska



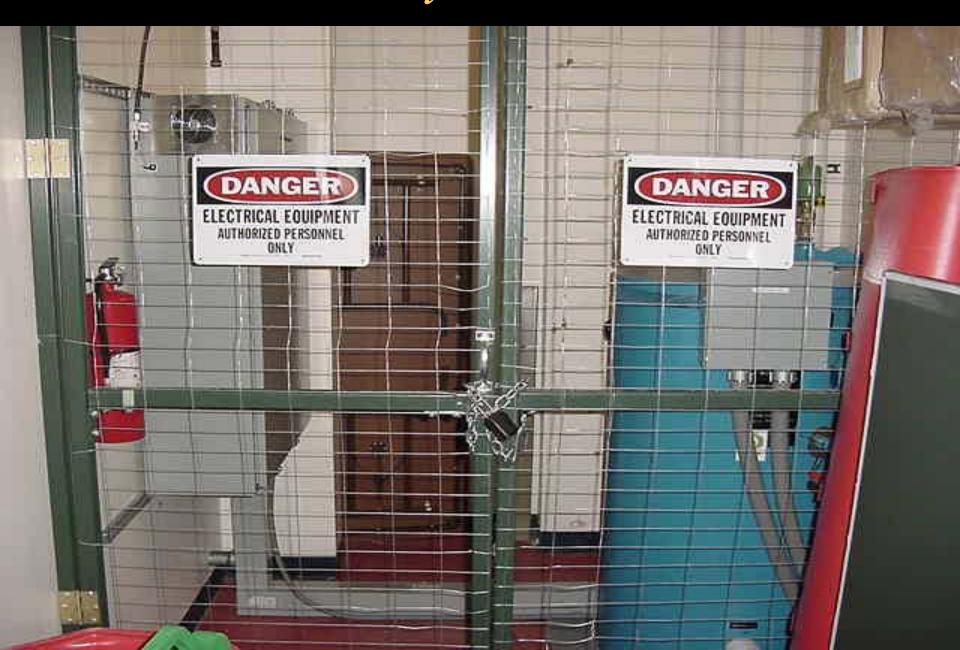
#### Control Panels - Wales



## System Controller - Wales



#### Secondary Heat - Wales School



#### Project Problems - Expected/Unexpected

- Wales diesel plant and school had to be converted from single phase to 3 phase
- Diesel generators were not pitched the same, one had to be replaced
- Modifications to the diesel plant fuel system were needed
- Modifications to diesel plant cooling system were needed
- Operator acceptance of system

#### Recent Problems - Expected/Unexpected

- Plant boiler control circuit has had several failures and the system will not run
- Slow responding diesels will not allow system to run with diesels off mode
- A number of the PLC cards have failed causing problems with the local dump loads
- Turbine #1 currently has a tip brake problem
- Turbine #2 currently has a speed sensor problem

#### Recent Problems - Expected/Unexpected

- Problems with diesel plant temperature control valve is causing cooling system problems, and also causing community outages
- A temperature probe on the ESS maybe causing a system fault indication, could be thermocouple or PLC card, needs trouble shooting
- Salt air corrosion has meant early replacement of junction boxes
- Community load balancing is an issue